UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,043	09/10/2003	Henry Esmond Butterworth	GB920020093US1	5777

7590	05/08/2006	EXAMINER

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ART UNIT	PAPER NUMBER
2188	

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>01 February 2006</u>.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-22</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-22</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 1-22 have been presented for examination in this application. In response to the

last Office Action, Claims 1,3,8,19,12-13,15,17,20,22 have been amended. As a result, claims 1-

22 are now pending in this application.

Claims 1-22 rejected.

All rejections and objections not explicitly repeated below are withdrawn.

Applicant's arguments filed 2/1/06 have been fully considered but they are not

persuasive. Therefore, the rejections from the previous office action are respectfully maintained,

with changes as needed to address the amendments.

All rejections and objections not explicitly repeated below are withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
>
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
>
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
>
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
>
> manner in which the invention was made.

Claims 1-5,8-22 are rejected under 35 U.S.C. 102 (e) as being as being unpatentable over Ohran (US 5835953).

As for claim 1, Ohran describes a storage apparatus operable as primary in a remote copy pair comprising: a remote copy component operable to establish a remote copy relationship between said primary, storing a primary copy, and a secondary, storing a secondary copy secondary copy (Ohran's column 5 lines 38-46 describes making full copies of data at primary computer and at secondary computer), a copy component operable at said primary to create a tertiary copy for download onto a portable physical storage medium for offline transport to said secondary for upload (Ohran describes a third copy is made at snap shot time, the "snap shot" copy contains only minimum changed data at the primary, that need to be transferred to the secondary, column 5 lines 58-67; Ohran's column 1 lines 45 to 50, column 2 lines 24-30 further teaches a method wherein a copy of data is copied and "offline" transporting it to a secondary site at a safe geographic distance from the first site; the storage media are typically "portable" and inexpensive disks or tapes);

a synchronization component for synchronizing data at said secondary with data at said primary using an online link in response to a request for synchronization from said secondary (circuits in the primary system to response to backup system request to initiate contact with a primary system; Ohran's column 12 lines 35-50);

a metadata component operable to store a dirty state indicator of a portion of a storage space at said primary after establishment of said remote copy relationship at said primary (circuits to track storage locations that have new data written between time T0 and T1; Ohran's column 11 lines 20-36);

and said metadata component being operable to limit synchronization of said secondary copy when uploading said tertiary copy from said portable physical storage medium at said secondary to said portion of storage having said dirty state indicator at said primary (Ohran's column 12 lines 5-10 clearly describes that because only copying minimum amount of data (i.e changed data), the data reconciling at the secondary is drastically reduced).

As for claim 2, Ohran's describes wherein said metadata component comprises a bitmap and said portion of said storage space is a grain of data (backup map comprises Boolean entries indicating storage locations of new data; column 13 lines 15-25).

As for claim 3, the claim recites further operable as a secondary in a remote copy pair and comprising: a loading component for uploading said tertiary copy from said portable physical storage medium (Backup is done in conventional way, copying to a tape and subsequently mounting the tape at secondary site; Ohran's column 10 lines 30-42); a suppressing component for suppressing synchronization from a metadata component in said secondary (Ohran's column 12 lines 45-47, the backup system of the secondary contacts primary system to receive only the changes that have occurred); and a requester component for requesting synchronization of data at said secondary with data at said primary using an online link (Ohran's column 14 lines 45-53).

As for claim 4, Ohran describes wherein said online link comprises a storage area network (Ohran's describes changing data blocks are transported by LAN, WAN; column 10 lines 1-7).

As for claim 5, the claim recites wherein said copy component comprises a Flash Copy

component (Ohran's clearly describes the point in time copy including keeping a snapshot of

storage locations that have new data; column 10 lines 55-65).

Claims 8,13,18 rejected based on the same rationale as in the rejection of claim 1.

Claims 9,14,19 rejected based on the same rationale as in the rejection of claim 2.

Claims 10,15,20 rejected based on the same rationale as in the rejection of claim 3.

Claims 11,16,21 rejected based on the same rationale as in the rejection of claim 4.

Claims 12,17,22 rejected based on the same rationale as in the rejection of claim 5.

Claims 6-7 rejected under 35 U.S.C. 103(a) as being unpatentable over Ohran (US

5835953) and further in view of Kamvysselis (US 6941429).

As for claim 6, the claim recites a storage adapter card comprising a storage apparatus as

claimed in claim 1. Ohran does not specifically describe circuits in the backup system residing in

a card. However, Kamvysselis describes an intelligent adapter card capable of providing data

copying and backing up functions (Fig 2: #117; column 4 lines 3-38). It would have been

obvious to one of ordinary skill in the art at the time of invention to include the adapter card

structures and functions as suggested by Kamvysselis in Ohran's system such that the backup

functions are provided by the adapter cards, thereby the conventional data mover computers are

eliminated and advantageously reducing foot-print in a data center (Kamvysselis's column 2

lines 17-30).

As for claim 7, the claim recites a storage virtualization engine comprising a storage

adapter card as claimed in claim 6. It has been known in the art that storage virtualization has

been employed in storage devices to provide the flexibility of sharing storage and migrating data

particularly for sharing data among multiple hosts.

Response to Arguments

Applicant's arguments in response to the last office action has been fully considered but

they are not persuasive. Examiner respectfully traverses Applicant's arguments for the following

reasons:

Regarding remarks on pages 7-8 for claim 1

A) Ohran's column 5 lines 38-46 describe making full copies of data at primary computer

and at secondary computer. Ohran further teaches the method of tracking only the changes in the

data at the primary storage. Then at a snap shot time, a third copy, the "snap shot" copy

containing only minimum changed data at the primary, that need to be transferred to the

secondary is generated; column 5 lines 58-67; Ohran describes many methods to transport the

changed data from the primary site to the secondary site that include using a low communication

link, or an alternative way (conventional method) of copying to a physical device and

transporting to the secondary site. The secondary site locates at a safe geographic distance from

the first site; the storage media being used are typically "portable" and inexpensive disks or

tapes; Ohran's column 1 lines 45 to 50, column 2 lines 24-30. Since only a minimum amount of

data are transferred and the changes are continue being tracked, the user access to the primary

data is not interrupted, this is contrast to the prior art wherein the primary site must be suspended

while the copying is being made. Thus the method is well suit for copying data using slow

transporting bandwidth or even conventional method, simply because the changes are continue

being tracked for multiple snap shots.

B) Applicant argues that Ohran's map or other mechanism that was used to track .." does

not suggest the claim's limit "metadata component operable to store a dirty state indicator".

Examiner maintains that Ohran's mechanism of tracking the changed data as described in

column 5 lines 45-60 provide change identifiers (equivalent to claim's dirty state indicator) that

are preserved in a snap shot copy.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

When responding to the office action, Applicant is advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc T. Doan whose telephone number is 571-272-4171. The examiner can normally be reached on M-F 8:00 AM 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER